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OBJECT ORIENTED SYSTEM FOR MANAGING COMPLEX FINANCIAL INSTRUMENTS

BACKGROUND OF THE INVENTION

FIELD OF INVENTION

5   This invention generally relates to the field of systems for data processing in the financial services industry, and more particularly to systems for managing substantial portfolios of derivatives and other complex financial instruments now widely used in that industry.

DESCRIPTION OF THE RELATED ART

10   There are several major domains of interest in the design and implementation of modern risk management systems. These include:

- modeling of valuation methodologies
- modeling of financial products
- modeling of market environment information
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- frameworks for risk analysis
- frameworks for persistence

Much thought and effort has been put into the study of valuation/pricing models for the financial services industry. These studies are often of a highly theoretical and academic nature. While the continued development of pricing models is absolutely essential
20   for the evolution of the financial business it does not supply the entire solution.

As a result of our experience in this field, we have concluded that the financial services industry cannot just concentrate on the valuation models alone. In practice, a typical financial institution at any time will have positions in significant numbers of financial instruments, the terms of which may vary significantly from one another, even
25   within a single series of instruments. Separate and apart from the science of pricing and valuing individual instruments, is the practical problem of managing such a number of

dissimilar instruments in a consistent manner. Another issue is adjusting the processing of those instruments in a consistent and coordinated way as the pricing and valuation techniques themselves evolve and change.

5   The ability of a firm's data processing systems to deal with such a number and variety of instruments is essential in order to support reliable and consistent financial and regulatory reporting, which is a key operating requirement for virtually all firms in this industry. Without such a system, the pricing results for similar instruments may vary inexplicably, portfolio valuations may be unreliable, and implementing new or modified pricing, valuation or processing techniques may require cumbersome instrument-by-
10   instrument adjustments which can become impracticable.

In order to solve such problems, we must study generic computer science methodologies that bring pragmatic systems considerations to light, which may then be applied. In addition to providing a new system architecture, our solution involves a formalized approach to the implementation of pricing and risk management systems, which we
15   believe is also essential to the success of the financial business in this area.

BRIEF SUMMARY OF THE INVENTION

It is an object of the present invention to address the issues of consistency, manageability and modifiability described above by applying object oriented design strategies and patterns to the modeling and processing of financial products (also referred to as
20   financial instruments) with an emphasis on derivative products. It is a further object of the invention to provide means to specify financial instruments in a consistent manner that lends itself to controlled and convenient instrument development and data entry. It is still a further object of the invention to provide a general means of processing financial data that is directed at the macro structure of a financial instrument but may be applied
25   without variance for individual instrument characteristics.

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5.   Conclusion

Our experience shows that the model described here offers significant benefits to the developers of financial systems that must use object oriented technologies to represent financial instruments. As currently implemented, it is biased towards systems where

5   pricing and large scale life cycle processing are the main deliverables. But, we believe that it is flexible and generic enough to be used successfully in various other capacities.

One of the main goals of this project was to design a model that could be maintained and extended for many years to come. Much thought and effort went into the design to try and accommodate the unknown future requirements of the financial industry.

10   While we recognize that we could not have covered all possibilities, we believe that we have significantly hedged our future needs.

The model described here has been implemented, to varying degrees, in both Smalltalk and Java. Both implementations are in production in the JP Morgan Fixed Income systems group. We believe that this model has significantly improved the ability of

15   the systems teams to manage and exploit the explosive growth in the Fixed Income business.

By the end of 1998, this model will be used to represent, process and store all financial trades, both simple and exotic, for the global JP Morgan Fixed Income business.

It is apparent from the foregoing that a new system has been developed that ac-

20   complishes the stated objects of the invention. While the presently existing embodiment and certain variations thereon have been described in detail, it will be apparent to those skilled in the art that the principles of the invention are readily adaptable to other adaptations and configurations of the systems described herein without departing from the scope and spirit of the invention, as defined in the following claims.

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